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10/783,034	02/23/2004	Rudy Jan Maria Pellens	081468-0308407	3791

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EXAMINER

QUINTO, KEVIN V

ART UNIT	PAPER NUMBER
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2826

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/783,034

Applicant(s)

PELLENS, RUDY JAN MARIA

Examiner

Kevin Quinto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,10-12,14,21,23 and 25 is/are rejected.
- 7) ☒ Claim(s) 3,4,6-9,13,15-19,22,24 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. Claims 23 and 25 are objected to because of the following informalities: the term "SiGa." Appropriate correction is required.
3. The examiner believes that the intended term was SiGe (silicon germanium) and has thus interpreted the claims in this manner.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 10, 11, 12, 14, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu et al. (USPN 6,962,771 B1).

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6. In reference to claim 1, Liu et al. (USPN 6,962,771 B1, hereinafter referred to as the "Liu" reference) discloses a method which meets the claim. Figures 2A, 2B, 3A, and 3B of Liu discloses a device manufacturing method which comprises providing a first layer (9) of electromagnetic radiation sensitive material on a substrate (1). A second layer (20) of electromagnetic radiation sensitive material is provided on the first layer (9) of radiation sensitive material. The second layer (20) of radiation sensitive material is of a different material than the first layer (9) of radiation sensitive material (column 5, lines 11-15). The first layer (9) of radiation sensitive material has a dose size of 150 to 500 mJ (column 6, lines 7-11). The second layer (20) of radiation sensitive material has a dose size of 10 to 20 mJ (column 6, lines 11-13). The dose of the first layer of radiation sensitive material (9) is at least approximately 1.5 times the magnitude of a dose size of the second layer (20) of radiation sensitive material. A beam of electromagnetic radiation is provided using an illumination system. The beam of radiation is imparted with a desired pattern in its cross-section by employing a patterning device which is followed by projecting the patterned beam of radiation onto a target portion of the first (9) and second (20) layers of radiation sensitive material (column 5, lines 41-61).

7. In reference to claim 5, the first (9) and second (20) materials are substantially immiscible.

8. With regard to claim 10, the first (9) and second (20) layer materials are positive radiation sensitive (column 5, lines 11-12).

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9. In reference to claim 11, the first and second layers of radiation sensitive material are developed in order to remove the portions which have been exposed (column 5, lines 41-61).

10. With regard to claim 12, the removed portion of the first layer (9) is smaller than the second portion of the second layer (20).

11. In reference to claim 14, Liu discloses (column 6, lines 57-61) that a first layer of metal is deposited on the substrate (1).

12. With regard to claim 23, Liu discloses (column 5, line 17) the use of silicon as the substrate (1).

13. Claims 20 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu et al. (USPN 6,962,771 B1).

14. In reference to claim 20, Liu (USPN 6,962,771 B1) discloses a substrate which meets the claim. Figures 2A, 2B, 3A, and 3B of Liu discloses a substrate (1) with a first layer (9) of electromagnetic radiation sensitive material attached to a surface. A second layer (20) of electromagnetic radiation sensitive material is attached to the first layer (9) of radiation sensitive material. The second layer (20) of radiation sensitive material is of a different material than the first layer (9) of radiation sensitive material (column 5, lines 11-15). The first layer (9) of radiation sensitive material has a dose size of 150 to 500 mJ (column 6, lines 7-11). The second layer (20) of radiation sensitive material has a dose size of 10 to 20 mJ (column 6, lines 11-13). The dose of the first layer of radiation sensitive material (9) is at least approximately 1.5 times the magnitude of a dose size of the second layer (20) of radiation sensitive material.

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15. With regard to claim 25, Liu discloses (column 5, line 17) the use of silicon as the substrate (1).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 1, 2, 5, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (USPN 5,496,770).

18. In reference to claim 1, Park (USPN 5,496,770) discloses a device manufacturing method which meets the claim. Figures 4A-4D illustrate a substrate (31) with a first layer of electromagnetic radiation sensitive material (41) provided on it. A second layer of electromagnetic radiation sensitive material (43) is provided on the first layer of radiation sensitive material (41). The first layer of radiation sensitive material (41) is of a different material than the second layer of radiation sensitive material (43). Park does not explicitly state that the first layer of radiation sensitive material (41) has a dose size of at least approximately 1.5 times the magnitude of the dose size of the second layer of radiation sensitive material (43). However Park discloses that the first photoresist layer (41) and the second photoresist layer (43) each have a dose size in the range of 100 to 2000 mJ/cm²; thus the claimed range overlaps and also lies within the range disclosed by Park. The examiner would like to note:

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In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05.

Furthermore the examiner would also like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Therefore claim 1 is not patentably distinguishable over the Park reference.

19. With regard to claim 2, Park does not explicitly state that the first layer of radiation sensitive material (41) has a dose size of approximately 1.5 times to 2.5 times the magnitude of the dose size of the second layer of radiation sensitive material (43). However Park discloses that the first photoresist layer (41) and the second photoresist layer (43) each have a dose size in the range of 100 to 2000 mJ/cm²; thus the claimed range overlaps and also lies within the range disclosed by Park. The examiner would like to note:

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05.

Furthermore the examiner would also like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Therefore claim 2 is not patentably distinguishable over the Park reference.

20. In reference to claim 5, the first (41) and second (43) materials are substantially immiscible.

21. In reference to claim 11, the first (41) and second (43) layers of radiation sensitive material are developed in order to remove the portions which have been exposed (column 4, lines 57-67, column 5, lines 1-13).

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22. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (USPN 5,496,770).

23. In reference to claim 20, Park (USPN 5,496,770) discloses a substrate which meets the claim. Figures 4A-4D illustrate a substrate (31) for use in an electromagnetic lithographic apparatus. The substrate (31) comprises a first layer of electromagnetic radiation sensitive material (41) attached to a surface and a second layer of electromagnetic radiation sensitive material (43) attached to the first layer of radiation sensitive material (41). The first layer of radiation sensitive material (41) is of a different material than the second layer of radiation sensitive material (43). Park does not explicitly state that the first layer of radiation sensitive material (41) has a dose size of at least approximately 1.5 times the magnitude of the dose size of the second layer of radiation sensitive material (43). However Park discloses that the first photoresist layer (41) and the second photoresist layer (43) each have a dose size in the range of 100 to 2000 mJ/cm²; thus the claimed range overlaps and also lies within the range disclosed by Park. The examiner would like to note:

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05.

Furthermore the examiner would also like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Therefore claim 20 is not patentably distinguishable over the Park reference.

24. With regard to claim 21, Park does not explicitly state that the first layer of radiation sensitive material (41) has a dose size of approximately 1.5 times to 2.5 times

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the magnitude of the dose size of the second layer of radiation sensitive material (43).

However Park discloses that the first photoresist layer (41) and the second photoresist layer (43) each have a dose size in the range of 100 to 2000 mJ/cm²; thus the claimed range overlaps and also lies within the range disclosed by Park. The examiner would like to note:

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05.

Furthermore the examiner would also like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Therefore claim 21 is not patentably distinguishable over the Park reference.

25. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (USPN 6,962,771 B1) in view of Ahmed et al. (United States Patent Application Publication No. US 2004/0056304 A1).

26. With regard to claim 23, Liu does not disclose the use of GaAs, GaN, InP, or SiGe as the substrate material. However Ahmed et al. (United States Patent Application Publication No. US 2004/0056304 A1, hereinafter referred to as the "Ahmed" reference) discloses that these materials are well known semiconductor substrate materials (p. 2, paragraph 27). The applicant is reminded in this regard that it has been held that mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. In re Leshin 125 USPQ 416. Therefore claim 23 is not patentable over the Liu and Ahmed references.

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27. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park (USPN 5,496,770) in view of Ahmed et al. (United States Patent Application Publication No. US 2004/0056304 A1).

28. With regard to claim 25, Park does not disclose the use of GaAs, Si, GaN, InP, or SiGe as the substrate material. However Ahmed et al. (United States Patent Application Publication No. US 2004/0056304 A1, hereinafter referred to as the "Ahmed" reference) discloses that these materials are well known semiconductor substrate materials (p. 2, paragraph 27). The applicant is reminded in this regard that it has been held that mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. In re Leshin 125 USPQ 416. Therefore claim 25 is not patentable over the Park and Ahmed references.

Allowable Subject Matter

29. Claims 3, 4, 6-9, 13, 15-19, 22, 24, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

30. The following is a statement of reasons for the indication of allowable subject matter: the reasons for allowance were cited in a previous Office action.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KVQ



LEONARDO ANDUJAR
PRIMARY EXAMINER